

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F.
Larsen

January 2004

Tests 2288 & 2289: Challenger MT455B Diesel

Follow this and additional works at: <https://digitalcommons.unl.edu/tractormuseumlit>



Part of the [Applied Mechanics Commons](#)

"Tests 2288 & 2289: Challenger MT455B Diesel" (2004). *Nebraska Tractor Tests*. 317.
<https://digitalcommons.unl.edu/tractormuseumlit/317>

This Article is brought to you for free and open access by the Tractor Test and Power Museum, The Lester F. Larsen at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Nebraska Tractor Tests by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

SUMMARY OF OECD TESTS 2288 & 2289—NEBRASKA SUMMARY 516

CHALLENGER MT455B DIESEL

16 SPEED

POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed—(PTO speed—1100 rpm)					
80.2 (59.8)	2200	5.22 (19.75)	0.461 (0.281)	15.37 (3.03)	
Standard Power Take-off Speed(1000 rpm)					
82.5 (61.5)	2000	4.94 (18.70)	0.425 (0.259)	16.69 (3.29)	
Maximum Power (2 hours)					
82.6 (61.6)	1955	4.86 (18.38)	0.419 (0.254)	17.00 (3.35)	

VARYING POWER AND FUEL CONSUMPTION

80.2 (59.8)	2200	5.22 (19.75)	0.461 (0.281)	15.37 (3.03)	Air temperature
70.4 (52.5)	2262	4.87 (18.42)	0.490 (0.298)	14.47 (2.85)	70°F (22°C)
52.6 (39.2)	2277	4.25 (16.08)	0.573 (0.349)	12.38 (2.44)	Relative humidity
34.9 (26.0)	2293	3.28 (12.40)	0.666 (0.405)	10.64 (2.10)	56%
17.4 (13.0)	2311	2.50 (9.44)	1.017 (0.619)	6.97 (1.37)	Barometer
--	2323	1.59 (6.03)	--	--	29.3" Hg (99.7 kPa)

Maximum Torque - 271.3 lb.-ft. (367.8 Nm) at 1300 rpm
Maximum Torque Rise - 41.8%
Torque rise at 1750 engine rpm - 27%

DRAWBAR PERFORMANCE

(Unballasted - Front Drive Engaged)

FUEL CONSUMPTION CHARACTERISTICS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power—8th(11C) Gear									
66.8 (49.8)	4050 (18.0)	6.18 (9.95)	2201	5.3	0.575 (0.350)	12.33 (2.43)	192 (89)	50 (10)	29.9 (101.4)
75% of Pull at Maximum Power—8th(11C) Gear									
51.8 (38.6)	3035 (13.5)	6.40 (10.30)	2249	4.1	0.669 (0.407)	10.61 (2.09)	190 (88)	50 (10)	29.9 (101.4)
50% of Pull at Maximum Power—8th(11C) Gear									
35.3 (26.3)	2030 (9.0)	6.52 (10.50)	2269	3.1	0.777 (0.473)	9.13 (1.80)	190 (88)	50 (10)	29.9 (101.4)
75% of Pull at Reduced Engine Speed—10th(11D) Gear									
52.3 (39.0)	3060 (13.6)	6.41 (10.32)	1799	4.4	0.527 (0.321)	13.45 (2.65)	187 (86)	50 (10)	29.9 (101.4)
50% of Pull at Reduced Engine Speed—10th(11D) Gear									
35.3 (26.3)	2030 (9.0)	6.52 (10.50)	1804	3.0	0.639 (0.389)	11.10 (2.19)	185 (85)	50 (10)	29.9 (101.4)

Location of tests: Groupement d'Antony, Parc de Touvoie, BP 44 Antony, Cedex, France 92163

Dates of tests: May, 2004

Sound tests: January 19, 2006

Manufacturer: AGCOS.A. BP 307, Avenue Blaise Pascal, 60026 Beauvais, France

FUEL and OIL: Fuel No. 2 Diesel **Specific gravity converted to 60°/60° F (15°/15°C)** 0.852 **Fuel weight** 7.09 lbs/gal (0.850 kg/l) **Oil SAE** 15W40 **API service classification** CH4 **Transmission and hydraulic lubricant** BP Terrac Tractan 9 fluid **Front axle lubricant** API GL5 -SAE 85W140

ENGINE: Make Perkins Diesel **Type** four cylinder vertical with turbocharger **Serial No.** U090535J **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 4.134" x 5.00" (105.0 mm x 127.0 mm) **Compression ratio** 17.5 to 1 **Displacement** 268 cu in (4400 ml) **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** thermostat

CHASSIS: **Type** 2WD and FWA **Serial No.** N005101 **Tread width** rear 59.8" (1518 mm) to 67.0" (1703 mm) front 2WD - 53.0" (1345 mm) to 87.3" (2217 mm), FWA - 53.4" (1357 mm) to 64.8" (1646 mm) **Wheelbase** 2WD - 97.0" (2463 mm) FWA - 97.0" (2463 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Nominal travel speeds mph (km/h)** first 1.69 (2.72) second 2.13 (3.43) third 2.55 (4.10) fourth 3.22 (5.19) fifth 3.77 (6.07) sixth 4.77 (7.68) seventh 5.11 (8.22) eighth 6.33 (10.18) ninth 6.46 (10.39) tenth 7.99 (12.86) eleventh 9.56 (15.39) twelfth 12.07 (19.43) thirteenth 14.14 (22.76) fourteenth 17.88 (28.77) fifteenth 19.15 (30.82) sixteenth 24.18 (38.92) reverse 1.64 (2.64), 2.08 (3.34), 2.48 (3.99), 3.13 (5.04), 3.67 (5.90), 4.64 (7.46), 4.96 (7.99), 6.15 (9.89), 6.27 (10.09), 7.77 (12.50), 9.30 (14.96), 11.73 (18.88), 13.75 (22.12), 17.37 (27.95), 18.61 (29.95), 23.49 (37.81) **Clutch** multiple wet disc operated by foot pedal **Brakes** multiple wet disc hydraulically operated by two foot pedals that can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 1980 engine rpm or 1000 rpm at 2000 engine rpm **Unladen tractor mass** 2WD - 8675 lb (3935 kg), FWA - 9305 lb (4220 kg)

DRAWBAR PERFORMANCE

(Unballasted - Front Drive Engaged) MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
4th(2TD) Gear									
63.8 (47.6)	8725 (38.8)	2.74 (4.42)	2135	14.6	0.599 (0.364)	11.84 (2.33)	189 (87)	48 (9)	29.9 (101.4)
5th(3TC) Gear									
67.5 (50.3)	7735 (34.4)	3.27 (5.27)	2039	9.0	0.514 (0.313)	13.80 (2.72)	190 (88)	48 (9)	29.9 (101.4)
6th(3TD) Gear									
68.1 (50.8)	6315 (28.1)	4.04 (6.50)	1953	7.3	0.539 (0.328)	13.15 (2.59)	189 (87)	48 (9)	29.9 (101.4)
7th(4TC) Gear									
67.9 (50.6)	5850 (26.0)	4.35 (7.00)	1949	6.8	0.531 (0.323)	13.35 (2.63)	190 (88)	48 (9)	29.9 (101.4)
8th(1LC) Gear									
68.3 (50.9)	4655 (20.7)	5.50 (8.85)	1965	5.7	0.499 (0.304)	14.21 (2.80)	192 (89)	50 (10)	29.9 (101.4)
9th(4TD) Gear									
67.7 (50.5)	4520 (20.1)	5.62 (9.05)	1966	5.2	0.518 (0.315)	13.71 (2.70)	190 (88)	50 (10)	29.9 (101.4)
10th(1LD) Gear									
66.6 (49.7)	3570 (15.9)	7.00 (11.26)	1961	4.3	0.523 (0.318)	13.55 (2.67)	192 (89)	50 (10)	29.9 (101.4)
11th(2LC) Gear									
65.3 (48.7)	2925 (13.0)	8.37 (13.47)	1963	5.0	0.517 (0.314)	13.72 (2.70)	194 (90)	50 (10)	29.9 (101.4)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments

NOTE : The test results on this Summary were obtained from tests carried out on the Massey Ferguson 5455 Diesel.

REMARKS: All test results were determined from observed data obtained in accordance with official OECD test procedures. This tractor did not meet the manufacturer's claims of 26.4 GPM (100 lpm) remote hydraulic flow, nor 72 dB(A) cab sound level. The performance figures on this summary were taken from a test conducted under the OECD Code II test procedure.

We, the undersigned, certify that this is a true summary of data from OECD Reports No. **2288 & 2289**, Nebraska Summary 516, March 17, 2006.

Leonard L. Bashford
Director

M.F. Kocher
V.I. Adamchuk
J.A. Smith
Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	2WD dB(A)	Engaged dB(A)
At no load in 7th (4TC) gear	75.2	75.2
Bystander in 16th (4LD) gear	88.3	--

Tested Without Ballast		
TIRES AND WEIGHT	Front Wheel Assist	2WD
Rear tires - No., size, ply & psi(kPa)	Two 18.4R38; **,15(100)	Two 18.4R38; **,15(100)
Front tires - No., size, ply & psi(kPa)	Two 14.9R28; **,16(110)	Two 10.00-16; 8; 30 (210)
Height of Drawbar	21.7 in (550 mm)	33.5 in (850 mm)
Static Weight with operator- Rear	5795 lb (2630 kg)	5765 lb (2615 kg)
- Front	3650 lb (1655 kg)	3120 lb (1415 kg)
- Total	9445 lb (4285 kg)	8885 lb (4030 kg)

DRAWBAR PERFORMANCE
(Unballasted - 2WD)
FUEL CONSUMPTION CHARACTERISTICS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power—8th(1LC) Gear									
65.6 (48.9)	4095 (18.2)	6.01 (9.67)	2200	8.0	0.548 (0.334)	12.93 (2.55)	194 (90)	68 (20)	30.1 (101.8)
75% of Pull at Maximum Power—8th(1LC) Gear									
51.5 (38.4)	3075 (13.7)	6.28 (10.10)	2253	6.1	0.632 (0.385)	11.22 (2.21)	194 (90)	66 (19)	30.1 (101.8)
50% of Pull at Maximum Power—8th(1LC) Gear									
35.1 (26.2)	2065 (9.2)	6.38 (10.26)	2273	5.5	0.794 (0.483)	8.93 (1.76)	192 (89)	66 (19)	30.1 (101.8)
75% of Pull at Reduced Engine Speed—10th(1LD) Gear									
51.4 (38.3)	3060 (13.6)	6.29 (10.13)	1812	6.8	0.522 (0.318)	13.59 (2.68)	189 (87)	68 (20)	30.1 (101.8)
50% of Pull at Reduced Engine Speed—10th(1LD) Gear									
35.1 (26.2)	2065 (9.2)	6.38 (10.26)	1802	5.1	0.602 (0.366)	11.78 (2.32)	187 (86)	66 (19)	30.1 (101.8)
MAXIMUM POWER IN SELECTED GEARS									
5th(3TC) Gear									
61.4 (45.8)	6835 (30.4)	3.37 (5.42)	2194	13.0	0.598 (0.364)	11.87 (2.34)	189 (87)	64 (18)	30.1 (101.8)
6th(3TD) Gear									
65.3 (48.7)	5955 (26.5)	4.11 (6.61)	2054	10.3	0.574 (0.349)	12.35 (2.43)	190 (88)	64 (18)	30.1 (101.8)
7th(4TC) Gear									
65.3 (48.7)	5780 (25.7)	4.24 (6.82)	1968	10.0	0.538 (0.327)	13.20 (2.60)	194 (90)	66 (19)	30.1 (101.8)
8th(1LC) Gear									
67.1 (50.0)	4745 (21.1)	5.30 (8.53)	1959	8.8	0.508 (0.309)	13.96 (2.75)	194 (90)	66 (19)	30.1 (101.8)
9th(4TD) Gear									
66.0 (49.2)	4535 (20.2)	5.46 (8.78)	1964	8.0	0.548 (0.333)	12.94 (2.55)	194 (90)	66 (19)	30.1 (101.8)
10th(1LD) Gear									
66.5 (49.6)	3690 (16.4)	6.76 (10.88)	1951	7.0	0.510 (0.310)	13.91 (2.74)	192 (89)	68 (20)	30.1 (101.8)
11th(2LC) Gear									
65.2 (48.6)	2990 (13.3)	8.18 (13.16)	1962	7.0	0.514 (0.313)	13.81 (2.72)	185 (85)	68 (20)	30.1 (101.8)

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: II

Quick Attach: None

Maximum force exerted through whole range: 7285 lbs (32.4 kN)

i) Opening pressure of relief valve: NA

Sustained pressure of the open relief valve: one outlet set 2800 psi (193 bar) two outlet sets combined 2800 psi (193 bar)

ii) Pump delivery rate at minimum pressure: 15.6 GPM (59.2 l/min) 15.6 GPM (59.1 l/min)

iii) Pump delivery rate at maximum hydraulic power: 14.8 GPM (56.1 l/min) 15.2 GPM (57.6 l/min)

Delivery pressure: 2295 psi (158 bar) 2305 psi (159 bar)

Power: 19.8 hp (14.8 kW) 20.5 Hp (15.3 kW)

HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm
A	25.6	650
B	11.6	295
C	13.9	354
D	13.0	330
E	7.9	200
F	10.2	260
G	30.5	775
H	1.9	48
I	16.3	413
J	20.3	515
K	25.2	640
L	41.2	1046
M	22.5	571
N	37.2	946
O	8.1	205
P	44.3	1125
Q	31.5	801
R	30.1	765

